

Caecal volvulus: ten year experience in an Australian teaching hospital

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Summary

Sixteen cases of caecal volvulus were treated surgically at a major Australian teaching hospital over a decade. Review of these cases suggests that this condition may be more common in fit people between 30 and 40 years of age than in the elderly or institutionalised. Caecal volvulus was more common in women than in men, possibly because adhesions from previous gynaecological surgery may initiate volvulus. In some other cases colonic distension due to poor muscle tone rather than distal obstruction may have been an important predisposing factor. Preoperative diagnosis was not usually made, but might have been facilitated if knowledge of the above predisposing factors had been available. This would allow colonoscopic reduction to be considered as a therapeutic alternative to laparotomy. At laparotomy, right hemicolectomy or caecal fixation (caecostomy or caecopexy) were the alternative methods of treatment.

Introduction

Volvulus of the caecum is relatively uncommon. It is said to account for less than 1% of all cases of intestinal obstruction (1,2), and for 25–40% of cases of volvulus of the colon (1,3). A mobile caecum, a prerequisite for volvulus, is found in 10–15% of cadavers (4), a number that far exceeds incidence of caecal volvulus. Therefore other causative factors must be involved, although their relative importance has not been clearly defined. It is thought that a common underlying factor may be chronic distension of the colon, possibly resulting from intestinal atony (5,6), coupled with a mobile caecum and a deep, narrowly based mesentery (6). In this setting colonic dilatation on its own results in volvulus, a phenomenon which has been demonstrated in an *in vitro* model by Perry (6).

The present review of all cases of acute caecal volvulus presenting to a major metropolitan teaching hospital in a ten year period was carried out to elucidate further the pathogenesis, natural history and optimal treatment of the condition.

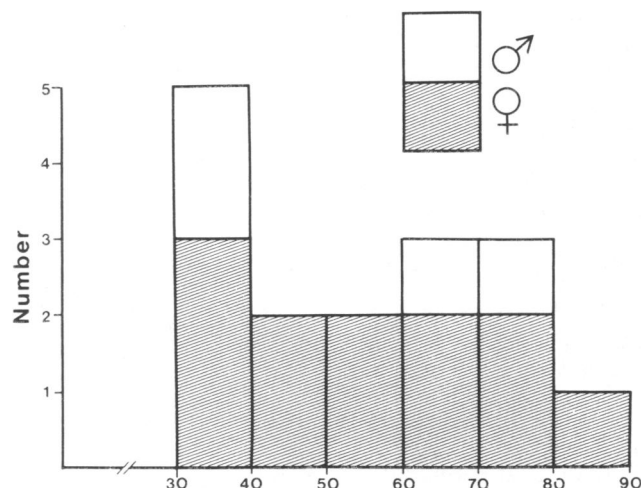


FIG. 1. Age and sex distribution of patients in the present series.

Methods

The hospital records of all patients treated at the Princess Alexandra Hospital, Brisbane, for caecal volvulus from 1976 to 1986 were identified by means of the hospital's computerised medical records system. In each case clinical features at presentation, past medical history, intercurrent illnesses, possible predisposing factors, diagnostic investigations, surgical findings and treatment and subsequent follow-up were recorded. The radiographs and radiologists' reports were obtained where possible and preoperative plain abdominal X-rays were reviewed by a consultant radiologist (JCR).

Results

Sixteen cases of caecal volvulus were treated during the 10 year period, representing 0.7% of all cases of acute intestinal obstruction admitted. The mean age was 54 years (range 30 to 82 years), with a peak in the younger age group (30–40 years) and another in a more elderly group (fig. 1).

TABLE I *Symptoms recorded at presentation*

Symptoms	Number	Percentage of whole series
Abdominal pain	15	94
Nausea and vomiting	7	44
Nausea only	5	31
Constipation	6	38
Abdominal distension	5	31

TABLE II *Site of pain in patients presenting with this symptom (n=15)*

Site of pain	Number	Percentage of patients with pain
Lower abdomen	11	73
right	5	33
left	1	7
diffuse	5	33
Upper abdomen	3	20
Generalised	1	7

Although previous abdominal surgery had been performed in 11 of the 16 patients, caecal volvulus was considered at operation to be related to adhesions in only 3. Eleven patients had a previous history of abdominal surgery. Three had undergone appendicectomy, one had been treated 6 years previously for a caecal volvulus by caecopexy with caecostomy, and 7 had undergone gynaecological procedures (4 hysterectomies and 3 caesarian sections). Three patients gave a history of chronic laxative use, and 7 had multiple medical problems, although only 4 patients were acutely ill as a result of these at the time of presentation. There were 5 patients aged between 30 and 40; one was paraplegic but the others were fit and well. Of these 4, 3 were female and had a past history of pelvic surgery (2 caesarian sections and 1 hysterectomy). Two of the 16 cases occurred shortly after surgery for other conditions, one 4 days after reduction of a small intestinal volvulus and the other after adductor tenotomy. Congenital malrotation of the small and large bowel was found at operation in one further case. None of the 16 cases occurred in individuals who were institutionalised or had a past history of major psychiatric illness. No distal obstructing lesion was found in the large bowel in any patient.

The onset of symptoms was acute in 8 patients (50%). Seven (44%) gave a history of similar but less severe episodes for 1 to 2 months and one patient had a 6 year history of recurrent abdominal pain. Abdominal pain was the most frequent presenting symptom (Table I), being present in 15 (94%) of the 16 patients. One patient presented with painless abdominal distension. The site of pain was variable (Table II). The pain was colicky in 7 (47%) of these 15 patients, and constant in 6 (40%). The character of the pain was not described in the other two cases. Other symptoms recorded are detailed in Table I.

The most constant sign was abdominal tenderness which was present in 15 of the 16 cases (94%). This was localised to the right in 9 (60%) of these 15, mostly in the right iliac fossa (6 of 15 patients, or 40%). The tenderness was generalised in 6 of the 15 cases (40%) and localised to the left in one (7%). Abdominal distension was noted in 8 of the whole group of 16 patients (50%), and guarding in 4 (25%). No particular abnormalities in bowel sounds were noted. An abdominal mass was palpable in 5 cases (31% of the total series).

Abdominal radiographs were performed preoperatively in 14 of the 16 cases. The radiograph and/or radiologist's report were available for retrospective analysis in 9

of these. In retrospect a radiological diagnosis of caecal volvulus was obvious in 5 (56%) of the 9. However, the correct diagnosis was made preoperatively after assessment of the clinical signs and X-rays by the responsible clinician in only 3 (33%) of these 9 patients, while overall a correct preoperative diagnosis was made in only 4 (25%) of the total of 16 cases. Preoperative radiological contrast studies of the colon and colonoscopy were not performed in any patient.

All patients had early laparotomy. In 3 patients the bowel was not viable at operation, and right hemicolectomy was performed. Of the other 13 cases caecostomy was performed in 5, caecopexy in 3, caecostomy and caecopexy in 2, reduction only in 2, and right hemicolectomy in 1.

Five patients suffered complications in the early post-operative period. There was 1 death in a 61 year old woman who had chronic renal failure on admission, giving a hospital mortality of 6%. In two patients there was a clinically significant delay in resumption of normal intestinal motility postoperatively; neither case necessitated further surgical intervention. One patient suffered a myocardial infarct and another an episode of bronchopneumonia. Three late complications occurred during a mean period of 36 months' follow up. Two patients developed acute small bowel obstruction which resolved without requiring surgery; one patient, with a 6 year history of recurrent abdominal pain preoperatively, who was treated by reduction only went on to develop further episodes of recurrent abdominal pain which were thought to be psychogenic on the basis of further clinical assessment and investigation.

Discussion

The incidence of caecal volvulus recorded in this series was similar to that reported in other studies (1,2). The mean age of 54 years in our patients was also consistent with the findings of previous investigators (1-3,7). Since caecal volvulus is a rare condition, individual experience is necessarily limited, as in the present series. Conclusions from such a small series must therefore be tentative, but with this reservation some interesting findings seem to have emerged from the present study.

The peak incidence in the 30 to 40 year age group in our series indicates that caecal volvulus should be considered in young fit patients presenting with acute abdominal pain. This finding is consistent with the report of O'Mara *et al.* (1) that 26% of patients with caecal volvulus were less than 40 years of age. Colonic volvulus has been considered to occur typically in elderly, institutionalised patients often suffering from psychiatric conditions (1,6,8). However, it has been pointed out by Sturzak *et al.* that sigmoid volvulus is not necessarily confined to the elderly and institutionalised and may be just as common in young fit individuals (9). Our similar observations on the age distribution of patients suffering from acute caecal volvulus suggest that acute volvulus of the large bowel may no longer be particularly prevalent in the elderly or institutionalised.

In addition to the prerequisite of a freely mobile caecum on a mesentery, several additional predisposing factors have been implicated in the genesis of caecal volvulus, although the relative importance of these is unclear. Previous abdominal surgery, resulting in intraabdominal adhesions which could act as a fulcrum for caecal volvulus, has been considered important by several investigators (1,3,7). The most common history of previous surgery in the present series was gynaecological; 7 (58%) of the 12 female patients in the present series had previously undergone such procedures. At least in female patients therefore, previous gynaecological operations may be a more important factor in predisposing to

caecal volvulus than appendicectomy, which has been suggested as a major antecedent (1), although presumably a similar mechanism is involved. This may account for the fact that caecal volvulus in western societies is considerably more common in women than in men (1,2,7,10,11).

Intestinal distension or atony may have been a causative factor in 5 (31%) of the patients in the present series. Three of them suffered from chronic constipation and laxative abuse, one was paraplegic with impaired colonic motility, and one was suffering from postoperative paralytic ileus. Although distal obstruction of the colon has also been implicated in the pathogenesis of caecal volvulus (7), presumably because of the resulting colonic distension, this was not a feature in any patient in the present series.

Although abdominal pain is an almost invariable feature of acute caecal volvulus, the present study has confirmed that other presenting clinical features, particularly the site of abdominal pain, the presence of a mass, and the degree of abdominal tenderness and guarding, may be quite variable (1-4, 7, 12-15). Anderson and Lee (7) suggested that retrospective review of plain abdominal X-rays in these patients should be diagnostic in approximately 90%, but only 56% of the patients in our series were amenable to diagnosis in this way. In patients whose preoperative X-rays or radiology reports were available, the diagnosis was made on radiological grounds preoperatively in considerably fewer patients than this (33%). Low pressure barium enema may be useful in preoperative diagnosis if plain abdominal X-rays are equivocal (12); however, this approach can only be successful if the diagnosis of caecal volvulus or at least of colonic obstruction is suspected. This was not the case in the majority of patients in the present series.

The optimal treatment of caecal volvulus remains a matter of debate. Caecopexy (1,2,16), caecostomy (9), or both procedures in combination (7) have been advocated. Right hemicolectomy is clearly necessary in the presence of colonic infarction and may be more effective than any other operative manoeuvre in preventing recurrent volvulus. It has been argued that resection may be unnecessary when the bowel is viable as it carries a higher morbidity than simpler methods of treatment which is not sufficiently offset by a greater efficacy in reducing recurrence rates (2,4,9). Colonoscopic decompression has been advocated as an alternative to surgery (17) or prior to surgical fixation of the caecum, (4), but can only be used if the diagnosis is suspected at the time of presentation. The majority of patients in the present series were treated without colonic resection, and no recurrences were observed. However, in view of the relatively short follow-up period after surgery it would be unwise to draw firm conclusions from this, particularly since late recurrence rates of up to 20% have been recorded after simple detorsion (3,4). Depending on the presence or absence of infarcted bowel and the fitness of the patient for major surgery, right hemicolectomy or

alternatively fixation of the caecum by caecostomy or caecopexy would appear to be the therapeutic procedures of choice.

Early and accurate diagnosis of caecal volvulus is clearly of prime importance in selecting optimum treatment of the condition to minimise morbidity and mortality rates. The results of the present study indicate that this diagnosis should be borne in mind in young fit patients with acute intestinal obstruction as well as in those who are elderly or institutionalised, and that it should be considered particularly in women with a previous history of gynaecological surgery.

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References

- 1 O'Mara CS, Wilson TH, Stonesifer GL, Cameron JL. Caecal volvulus: Analysis of 50 patients with long-term follow-up. *Ann Surg* 1979;189:725-31.
- 2 Howard RG, Catto J. Caecal volvulus. A case for non-resectional therapy. *Arch Surg* 1980;115:273-7.
- 3 Burke JB, Ballantyne GH. Caecal volvulus. Low mortality at a city hospital. *Dis Colon Rectum* 1984;27:737-40.
- 4 Weiss BD. Caecal volvulus: A diagnostic and therapeutic challenge. *Postgrad Med* 1982;72:189-94.
- 5 Reasbeck PG. Caecal and sigmoid volvulus in the same patient. *Postgrad Med J* 1979;55:824-5.
- 6 Perry EG. Intestinal volvulus: A new concept. *Aust NZ J Surg* 1983;53:483-6.
- 7 Anderson JR, Lee D. Acute caecal volvulus. *Br J Surg* 1980;67:39-41.
- 8 Jones B, Chandie Shaw MP. Volvulus of caecum. *Br J Radiol* 1984;57:842-4.
- 9 Sturzaker HG, Lawrie RS, Joiner CL. Recurrent sigmoid volvulus in young people: A missed diagnosis. *Br Med J* 1975;4:338-9.
- 10 Todd GJ, Forde KA. Volvulus of the caecum: Choice of operation. *Am J Surg* 1979;138:632-4.
- 11 Morris DM, Eisenstat T, Hall GM. Management of caecal volvulus in debilitated patients. *South Med J* 1982;75:1069-71.
- 12 Haskin PH, Teplick SK, Teplick JG, Haskin ME. Volvulus of the caecum and right colon. *JAMA* 1981;245:2433-5.
- 13 Alinovi V, Herzberg FP, Yannopoulos D, Vetere PF. Caecal volvulus following caesarian section. *Obstet Gynaecol* 1980;55:131-4.
- 14 Pratt AT, Donaldson RC, Evertson LR, Yon JL. Caecal volvulus in pregnancy. *Obstet Gynaecol* 1981;57(6 Suppl):379-405.
- 15 Deluca SA, Rhea JT. Colonic volvulus. *Am Family Physician* 1982;25:135-6.
- 16 Bhaskar Rao A, McCartney T, Fletcher P. Volvulus of the colon. *Am J Proctol Gastroenterol Colon Rectal Surg* 1981;32:12-28.
- 17 Orchard JL, Mehta R, Khan AH. The use of colonoscopy in the treatment of colonic volvulus: Three cases and review of the literature. *Am J Gastroenterol* 1984;79:864-7.

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